



# FCC TEST REPORT

According to

**47 CFR, Part 2, Part 15 and CISPR PUB. 22**

Applicant	: LG Electronics USA
Address	: 1000 Sylvan Avenue Englewood Cliffs New Jersey United States
Manufacturer	: LG Electronics Nanjing Display Co., Ltd.
Address	: No.346, Yaoxin Road Economic & Technical Development Zone Nanjing China
Equipment	: LCD Monitor
Model No.	: E2241VX
FCC ID	: BEJE2241VX
Trade Name	: LG

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### I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 – 2003** and the energy emitted by this equipment was **passed CISPR PUB. 22 and FCC Part 15** in both radiated and conducted emission class B limits. Testing was carried out on Nov 24, 2010 at **CerpPASS Technology Corp.**

Documented By:

Approved By:

Cathy Chen/ Administration

Clinton Kao/ Technical director



## 1. Summary of Test Procedure and Test Result

Test Item	Normative References	Test Result
Conducted Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS
Radiated Emission	ANSI C63.4-2003 FCC Part 15 Subpart B	PASS



## 2. Test Configuration of Equipment under Test

### 2.1. Feature of Equipment under Test

LCD Monitor	Model No:	E2241VX
VGA Cable	Shielded, 1.8m, with two ferrite cores bonded	
VGA Cable	Shielded, 1.8m	
DVI Cable	Shielded, 1.8m, with two ferrite cores bonded	
Power Supply cable	Non-Shielded, 1.8m	
Note : The VGA Cable are alternative on selling.		

### 2.2. Test Manner

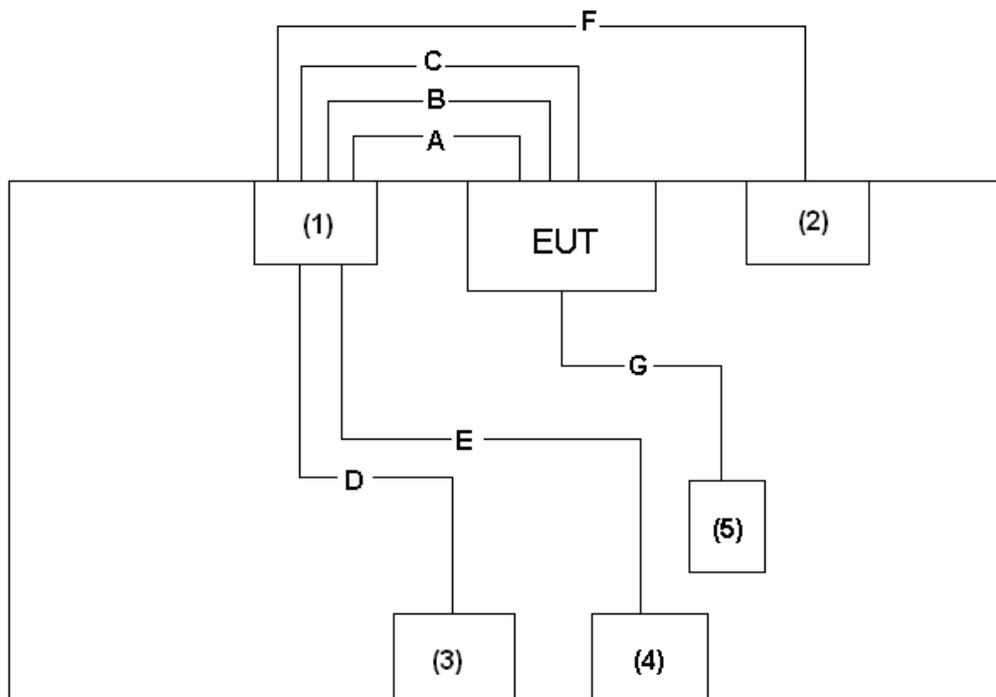
Test Software	
a	During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b	The complete test system included the PC, USB Mouse, USB Keyboard, Printer, Microphone&Earphone and EUT for EMI test.
c	During the test, setup up the EUT and all system, turn on the power of all Equipments, run the EMC test software "H", set the contrast control to maximum, set the brightness control to maximum, use white letters on a black background to represent all colors, make the EUT at the test mode and it is normal operation, and then test.
The pre-test modes	
	Test Mode 1: Full system (VGA mode 1920*1080@60Hz)
	Test Mode 2: Full system (VGA mode 1024*768@75Hz)
	Test Mode 3: Full system (VGA mode 800*600@60Hz )
	Test Mode 4: Full system (DVI mode 1920*1080@60Hz)
	Test Mode 5: Full system (DVI mode 1024*768@75Hz)
	Test Mode 6: Full system (DVI mode 800*600@60Hz )
	Test Mode 7: Full system (HDMI in mode)
Select the worst case of the pre-test modes as the final test mode	
	Test Mode 1: Full system (VGA mode 1920*1080@60Hz)



### 2.3. Description of Test System

No	Device	Manufacturer	Model No.	Description
1	PC	Dell	DCSM	N/A
2	Printer	Epson	EX3	N/A
3	USB Keyboard	DELL	SK-8115	N/A
4	USB Mouse	DELL	G0K02XYK	N/A
5	Microphone&Earphone	SALAR	N/A	N/A

### 2.4. Connection Diagram of Test System



No	Cable	Quantity	Description
A	VGA Cable	1	Shielded, 1.8m
B	DVI Cable	1	Shielded, 1.8m, with two ferrite cores bonded
C	HDMI Cable	1	Shielded, 1.8m
D	USB Cable	1	Shielded, 1.8m, with one ferrite core bonded
E	USB Cable	1	Shielded, 1.5m
F	Parallel Cable	1	Shielded, 1.8m
G	Audio Cable	1	Non-Shielded, 2.0m



2.5. General Information of Test

Test Site:	CerpPASS Technology Corp.
Performand Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-343 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated :	Conducted Emission Test: from 150kHz to 30 MHz Radiated Emission Test: from 30 MHz to 1,000 MHz Radiated Emission Test: from 1GHz to 18GHz
Test Distance :	The test distance of radiated emission below 1GHz from antenna to EUT is 3 M. The test distance of radiated emission above 1GHz from antenna to EUT is 3 M.

Laboratory accreditation



2.6. Measurement Uncertainty

Conducted Emission		
The measurement uncertainty is evaluated as ± 2.71 dB.		
Radiated Emission		
(30MHz -1000MHz)	Horizontal	The measurement uncertainty is evaluated as ±3.89dB.
	Vertical	The measurement uncertainty is evaluated as ± 3.59 dB.
(1G-18GHz)	Horizontal	The measurement uncertainty is evaluated as ± 2.31 dB.
	Vertical	The measurement uncertainty is evaluated as ± 2.15 dB.



### 3. Test of Conducted Emission

#### 3.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2003 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

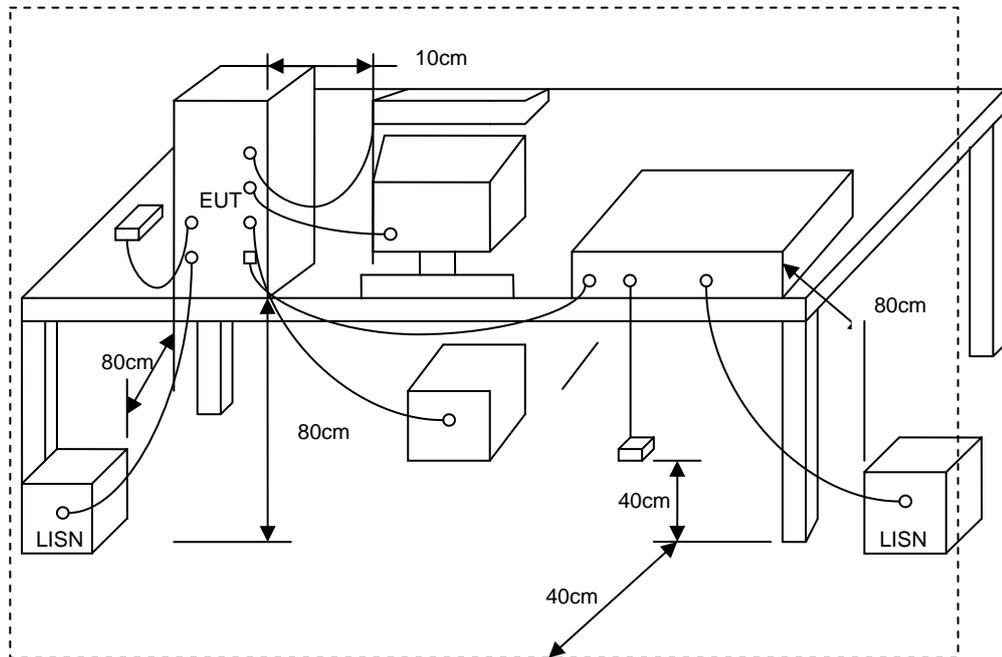
Frequency (MHz)	Quasi Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

#### 3.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



### 3.3. Typical test Setup



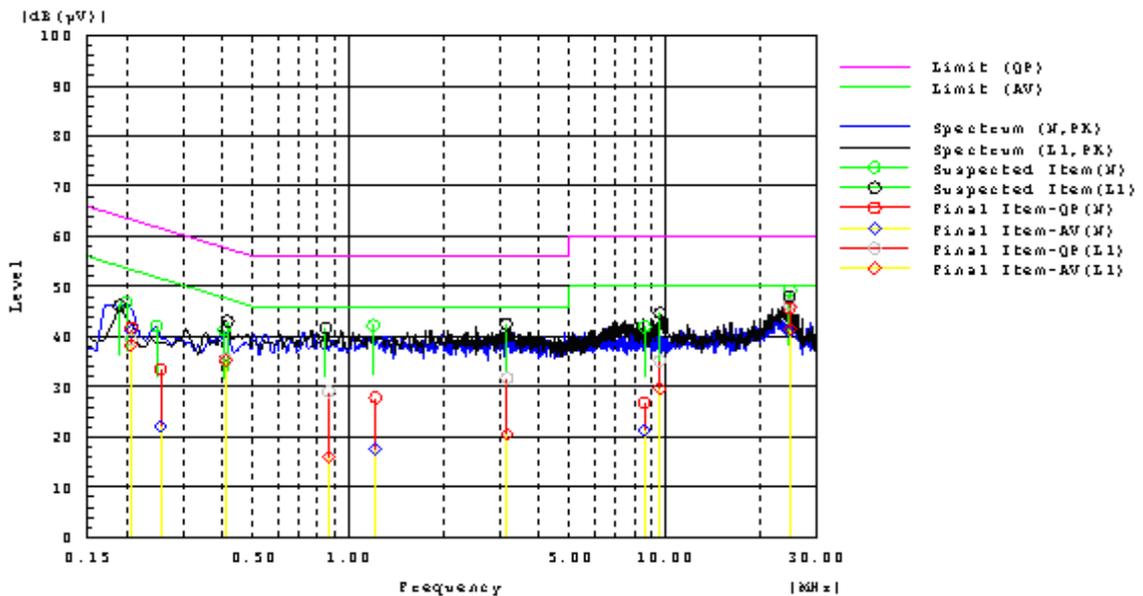
### 3.4. Measurement equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date
Test Receiver	R&S	ESCI	100565	2010.01.15
AMN	R&S	ESH2-Z5	100182	2010.06.23
Two-Line V-Network	R&S	ENV216	100325	2010.04.18
ISN	FCC	FCC-TLISN-T2-02	20379	2010.06.23
ISN	FCC	FCC-TLISN-T4-02	20380	2010.06.23
ISN	FCC	FCC-TLISN-T8-02	20381	2010.06.23
Current Probe	R&S	EZ-17	100303	2010.06.23
Attenuator	R&S	ESH3-Z2	100529	2010.01.11
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-004	2010.08.14



### 3.5. Test Result and Data

Test Mode :	Mode 1: Full system (VGA mode 1920*1080@60Hz)		
AC Power :	AC 120V/60Hz	Phase :	L&N
EUT :	LCD Monitor	Model No.:	E2241VX
Temperature :	22°C	Humidity :	50%
Pressur(mbar) :	1002	Date :	2010/11/20



Frequency MHz	Line Phase	Reading dB(uV) QP	Reading dB(uV) AV	Factor dB	Level dB(uV) QP	Level dB(uV) AV	Limit dB(uV) QP	Limit dB(uV) AV	Margin dB QP	Margin dB AV	Pass/Fail
0.20577	L1	19.6	18.4	19.9	39.5	38.3	63.4	53.4	23.9	15.1	Pass
0.40986	L1	15.6	15.4	19.9	35.5	35.3	57.7	47.7	22.2	12.4	Pass
0.86489	L1	9.3	-3.7	19.8	29.1	16.1	56.0	46.0	26.9	29.9	Pass
3.16883	L1	12.1	0.9	19.7	31.8	20.6	56.0	46.0	24.2	25.4	Pass
9.6344	L1	15.5	10.0	19.7	35.2	29.7	60.0	50.0	24.8	20.3	Pass
24.7744	L1	26.8	21.9	19.6	46.4	41.5	60.0	50.0	13.6	8.5	Pass
0.20597	N	22.2	21.7	19.5	41.7	41.2	63.4	53.4	21.7	12.2	Pass
0.25525	N	14.1	2.6	19.5	33.6	22.1	61.6	51.6	28.0	29.5	Pass
0.40967	N	15.9	15.7	19.5	35.4	35.2	57.7	47.7	22.3	12.5	Pass
1.21865	N	8.4	-1.8	19.4	27.8	17.6	56.0	46.0	28.2	28.4	Pass
8.6033	N	7.0	1.5	19.8	26.8	21.3	60.0	50.0	33.2	28.7	Pass
24.7748	N	25.9	21.1	19.8	45.7	40.9	60.0	50.0	14.3	9.1	Pass

Note: Measurement Level = Reading Level + Correct Factor

Test engineer: cheney yan



## 4. Test of Radiated Emission

### 4.1. Test Limit

Radiated emissions from 30 MHz to 1,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-2003. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 3.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (m)	Level (dBuV/m)	Level (dBuV/m)
30 - 88	3	40(QP)	N/A
88 - 216	3	43(QP)	N/A
216-960	3	46(QP)	N/A
960-1000	3	54(QP)	N/A
1000-18000	3	74(PK)	54(AV)

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB $\mu$ V/ M)
30-230	10	30
230-1000	10	37

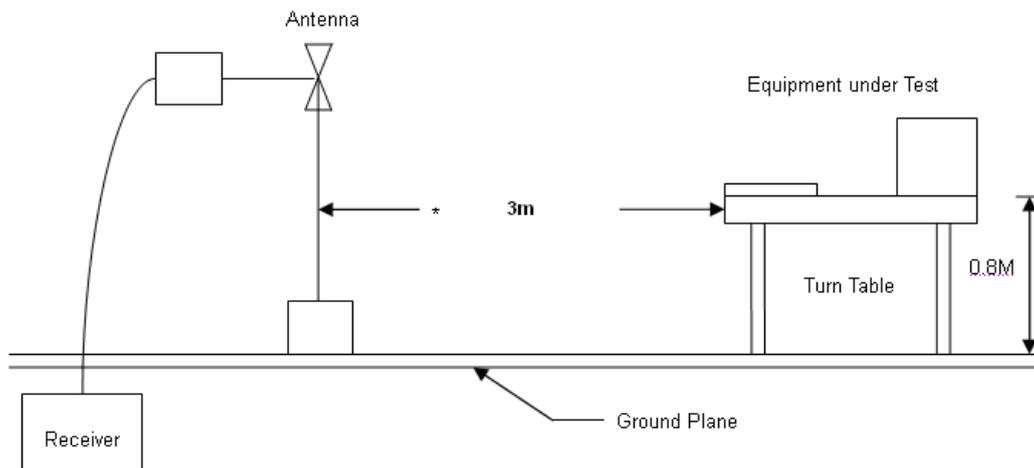


## 4.2. Test Procedures

- a. The EUT was placed on a Rota table top 0.8 meter above ground.
- b. The EUT and its simulators are placed on the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- c. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
- d. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.
- e. Radiated emissions were investigated over the frequency range from 30MHz to 1GHz using a receiver bandwidth of 120KHz and the frequency range from 1GHz to 18GHz using a receiver bandwidth of 1MHz.

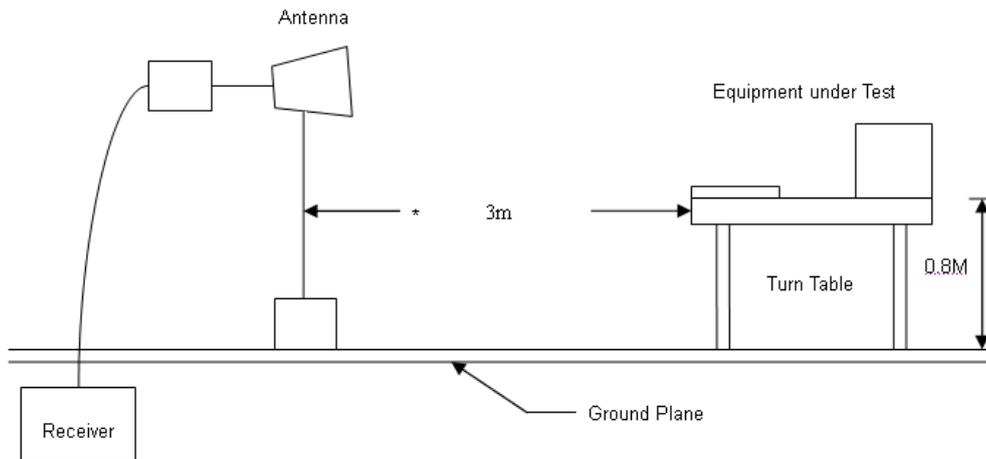
## 4.3. Typical test Setup

### Below 1GHz Test Setup





Above 1GHz Test Setup



4.4. Measurement equipment

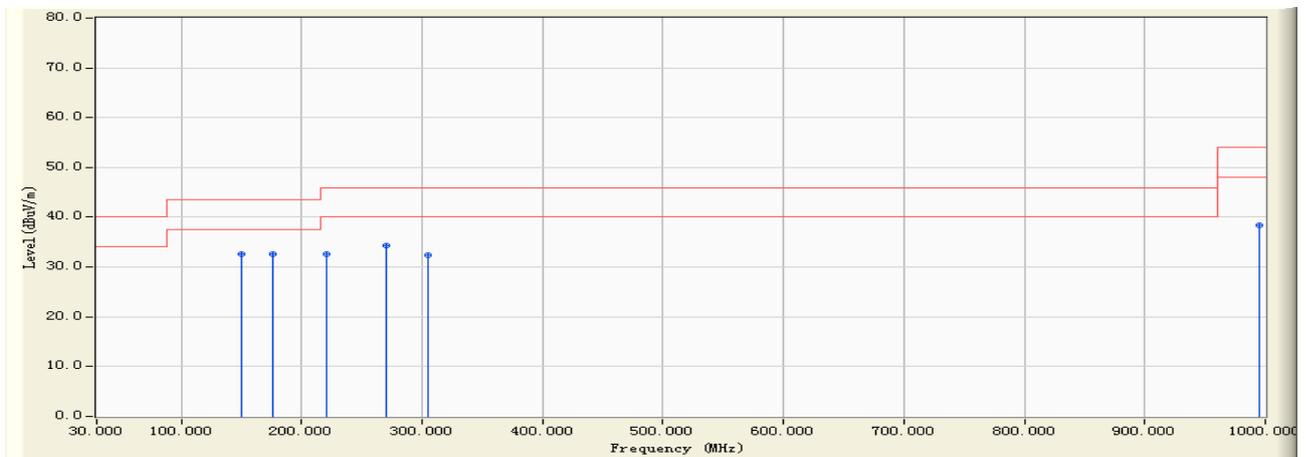
Instrument	Model No.	Manufacturer	Serial No.	Calibration Date
EMI Test Receiver	R&S	ESCI	100563	2010.06.23
H64 Amplifier	HP	8447F	3113A05582	2010.08.14
Preamplifier	Agilent	8449B	3008A02342	2010.02.10
Ultra Broadband Antenna	R&S	HL562	100363	2010.08.14
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	9120D-619	2010.08.14
Spectrum Analyzer	R&S	FSP40	100324	2010.08.14
Temperature/ Humidity Meter	Zhicheng	ZC1-11	CEP-TH-002	2010.08.17



### 4.5. Test Result and Data

#### Under 1G

Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/23 - 17:54
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



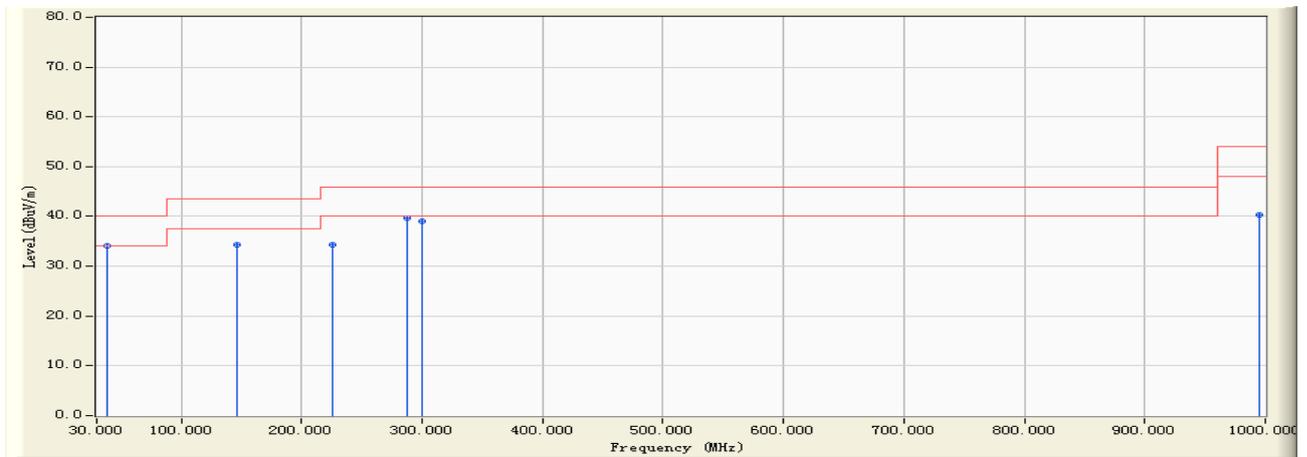
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	150.600	-17.945	50.600	32.655	-10.845	43.500	QUASIPeAK	400.000	148.600
2		175.650	-17.144	49.650	32.506	-10.994	43.500	QUASIPeAK	200.000	214.900
3		220.960	-16.408	48.950	32.543	-13.457	46.000	QUASIPeAK	200.000	78.900
4		270.230	-13.956	48.250	34.294	-11.706	46.000	QUASIPeAK	400.000	210.900
5		305.600	-13.098	45.400	32.302	-13.698	46.000	QUASIPeAK	200.000	146.900
6		995.600	-0.111	38.420	38.308	-15.692	54.000	QUASIPeAK	200.000	145.200

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/23 - 17:55
Limit : FCC_CLASS_B_03M_QP	Margin : 6
EUT : LCD Monitor	Probe : HL562(30-1000MHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	*	38.250	-12.189	46.200	34.011	-5.989	40.000	QUASIPeAK	100.000	253.600
2		145.950	-17.772	52.020	34.248	-9.252	43.500	QUASIPeAK	200.000	256.200
3		225.600	-16.171	50.450	34.279	-11.721	46.000	QUASIPeAK	100.000	125.600
4		287.600	-13.592	53.190	39.598	-6.402	46.000	QUASIPeAK	100.000	29.500
5		300.300	-13.259	52.300	39.041	-6.959	46.000	QUASIPeAK	100.000	256.100
6		995.620	-0.111	40.540	40.429	-13.571	54.000	QUASIPeAK	100.000	351.200

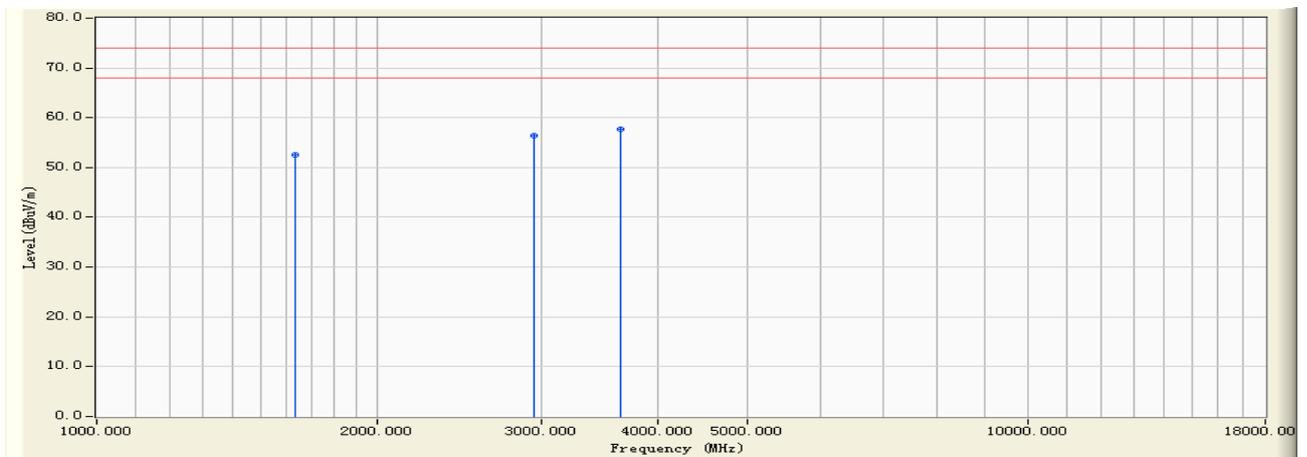
Note:

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2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Above 1G:

Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/24 - 09:36
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



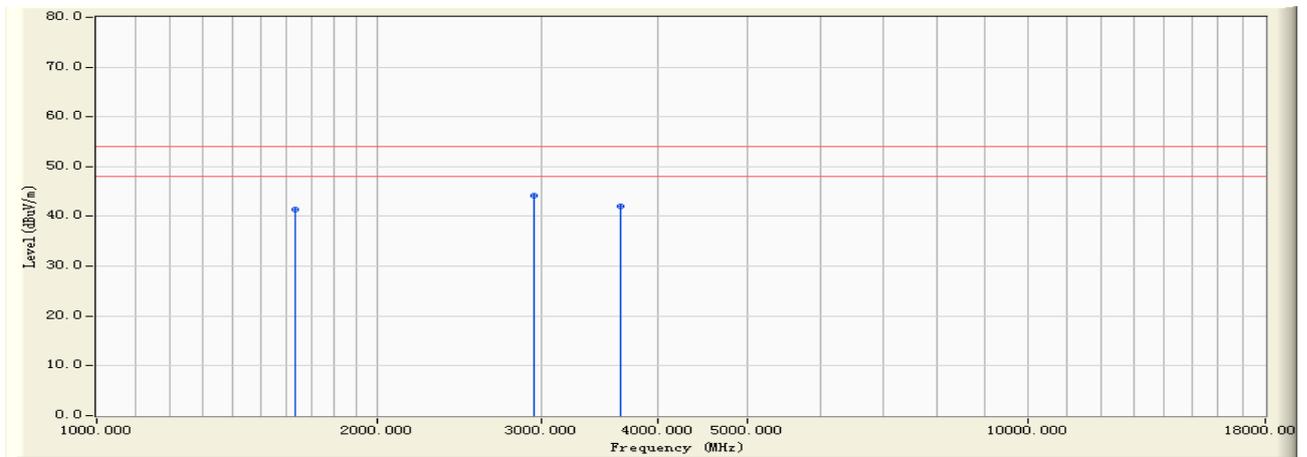
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	1636.580	-4.188	56.840	52.651	-21.349	74.000	PEAK	200.000	215.400
2	2946.340	0.531	55.840	56.371	-17.629	74.000	PEAK	200.000	219.500
3	* 3653.240	3.226	54.520	57.746	-16.254	74.000	PEAK	400.000	215.300

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/24 - 09:38
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



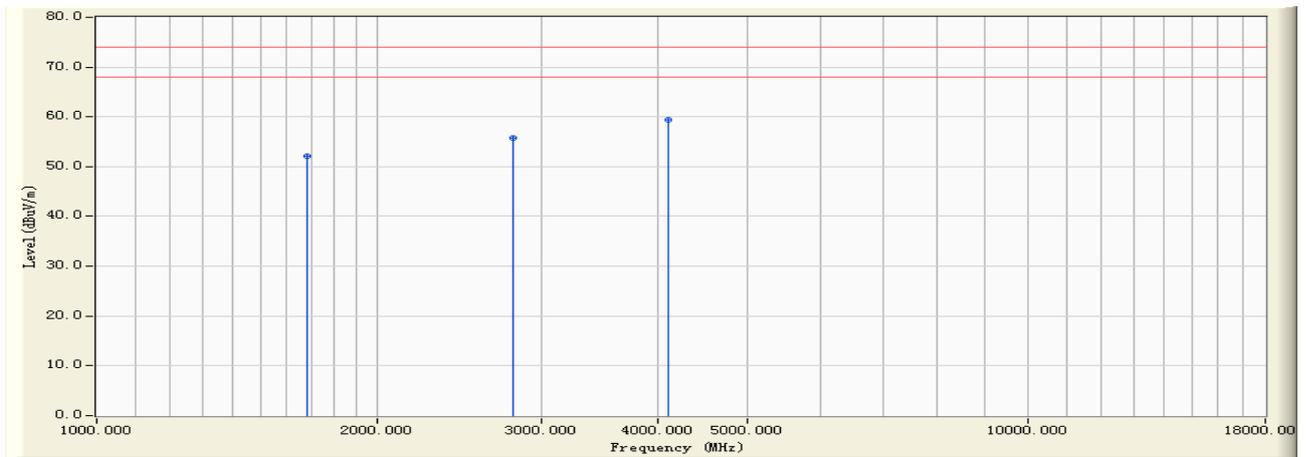
		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1		1636.580	-4.188	45.670	41.481	-12.519	54.000	AVERAGE	200.000	215.400
2	*	2946.340	0.531	43.570	44.101	-9.899	54.000	AVERAGE	200.000	219.500
3		3653.240	3.226	38.740	41.966	-12.034	54.000	AVERAGE	400.000	215.300

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/24 - 09:53
Limit : FCC_15_03M_PK	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



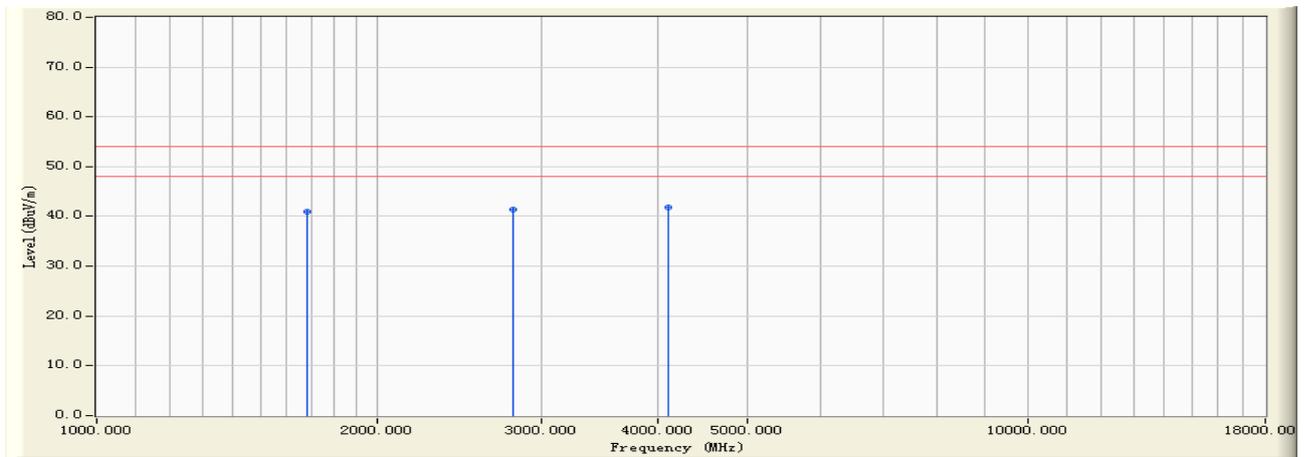
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	1685.940	-4.248	56.350	52.102	-21.898	74.000	PEAK	200.000	51.400
2	2799.650	0.564	55.250	55.815	-18.185	74.000	PEAK	100.000	346.500
3	* 4105.620	4.932	54.570	59.502	-14.498	74.000	PEAK	200.000	54.900

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



Engineer : Seven	
Site : EMC Lab AC 102	Time : 2010/11/24 - 09:58
Limit : FCC_15_03M_AV	Margin : 6
EUT : LCD Monitor	Probe : BBHA9120D(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1: Full system (VGA mode 1920*1080@60Hz)



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type	Ant Pos (cm)	Table Pos (deg)
1	1685.940	-4.248	45.320	41.072	-12.928	54.000	AVERAGE	200.000	51.400
2	2799.650	0.564	40.880	41.445	-12.555	54.000	AVERAGE	100.000	346.500
3	* 4105.620	4.932	36.880	41.812	-12.188	54.000	AVERAGE	0.000	200.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Test engineer: Seven